Radiofrequency ablation for hypertrophic obstructive cardiomyopathy: A novel technique to reduce left ventricular outflow tract gradient

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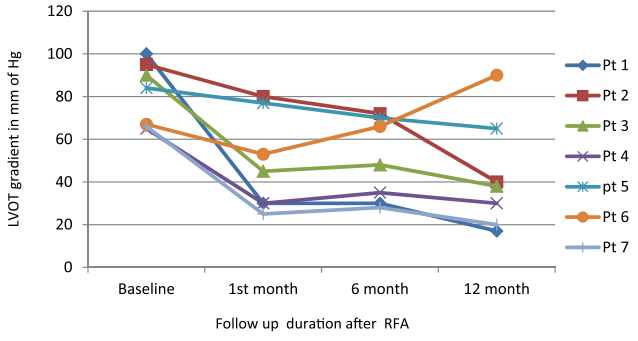
Background: Alcohol septal ablation (ASA) is an acceptable alternative to surgical myectomy in patients with hypertrophic obstructive cardiomyopathy (HOCM).However, the anatomical variability of septal branch, risk of complete heart block (CHB) limits its therapeutic use. Recently radiofrequency ablation (RFA) of septum has shown reduction in gradient, although with considerable risk of CHB.
Methods: Seven symptomatic HOCM patients (mean age 43.7±15.6 yrs, 5 men) with significant gradients on drug therapy were studied. These patients were unwilling for surgery and had unfavorable anatomy for ASA. Trans-aortic route was used to approach the LV septum. Areas with left bundle branch, left HIS signals, fascicular potentials were tagged using 3 D electroanatomical system (CARTO or NavX) to avoid RFA in these areas. Ablation of left septum was performed using open irrigated tip catheter in transition zone of pressure where maximum bulge of LV septum was seen on intracardiac echocardiography. Patients were followed up at 1, 6 and 12 months post procedure.
Results: Baseline mean LVOT gradient by Doppler echocardiography was 81± 14.8 mm of Hg. Post procedure mean Doppler echocardiography gradients were 48.5 ±22.6 mm of Hg (P value -0.004), 49.8 ±19.3 mm of Hg (P value -0.004), 42.8 ±26.1 mm of Hg (W=2, significant at p≤ 0.05) at 1, 6 and 12 months respectively. Mean NYHA class improved from 3.0 to 1.5 ±0.7. One patient with severe mitral regurgitation underwent surgical myectomy and mitral valve replacement for persistent symptoms and high gradients. One patient developed pulmonary edema immediate post procedure. She was managed with invasive ventilation and I.V. diuretics. No one developed peri or post procedure conduction disturbances or other complications.
Conclusions: RFA in patients with HOCM causes sustained reduction in the LVOT gradient and symptomatic improvement. Technical difficulty in catheter manipulation and septal contact may influence the outcome.



Effect of vitamin D supplementation with patients with NYHA class 2 and 3

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Aim: To study the effect of vitamin D supplementation on ejection fraction (EF) and six minute walk test (WT) in patients with New York Heart Association (NYHA) class 2 and 3 failure patients.
Methods: Thirty subjects (M:F 19:11) (68.6+12 yrs) with NYHA class 2-3 were assessed for their history of diabetes, hypertension, ischemic heart disease (IHD),drug intake, ejection fraction(EF), six minute walk test(WT) and biochemical parameters namely, serum albumin (S.Alb), calcium (S.Ca), phosphorous (S.Phos), creatinine (S.Cr), 25 OH vitamin D (VITD) and parathyroid hormone (PTH). Each individual were given injection cholecalciferol 600,000 IU and their EF, WT and biochemical parameters assessed after two months. Statistical analysis was done by SPSS software. Non parametric test were used for analysis (Wilcoxon signed ranks test).
Results: The patient categorization: were 12 diabetics, 12 hypertensives, 8 with IHD, 21 with NYHA class 2 and 9 with class 3,13 with Aspirin, 27 with ACI/ARB; 27 on loop diuretics, 28 on aldactone, 27 on beta blockers. The baseline biochemical parameters were S.Alb 3.5+0.43 g/dl; S.Cr 1.06+0.4 mg/dl; S.Ca 9+0.93 mg/dl; S.Phos 3.5+0.37mg/dl; S.PTH 57+ 9 pg/ml; VITD 7.3 +1.5 ng/ml. Post supplementation the VITD levels rose to 23+5.2 ng/ml (Z= - 4.703;P<0.0001). The baseline and post vitamin D supplementation values were EF 28.77+5.5Vs 29.42+4.3% (Z= - 1.934;P<0.05); WT 296+98 Vs 308.6+96 (Z= - 1.675;P<0.09). The whole group was analyzed after sub categorization NYHC and the type of therapy. Walk test improved in patients without IHD WT 278+106 Vs 295+103(Z= - 2.173;P<0.03) and those without aspirin therapy WT 263+103.5 Vs 282+104 (Z= - 1.929;P<0.05).There was no significant difference between NYHC 2 and 3; diabetics and non diabetics; hypertension and non hypertensives; treatment with or without ACI/ARB, loop diuretics, aldactone, beta blockers and digitalis therapy.
Conclusions: Normalization 25 OH vitamin D levels with vitamin D supplementation improved the EF and WT in patients without IHD; without aspirin therapy in subjects with NYHA class 2and 3 failures. Studies with larger cohort in various categories will be more informative.

Prognostic indicators of heart failure in Indian subjects

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Background: Heart failure is a common cardiovascular disease with high mortality and morbidity and its incidence is increasing. In India it affects younger age group. Present study aims at identifying all patients with chronic heart failure in Indian population over a period of two years at a tertiary care hospital. We aimed to identify primary etiology of heart failure and delineate the

prognostic indicators, so that aggressive management could be initiated at the earliest.

Methods: It is a prospective descriptive study conducted in the Kerala Institute of Medical Sciences, over a 21 month period from 1st June 2012. 271 consecutive patients with NYHA class 3 or 4 with various etiology of heart failure were identified. The patients belonged to Valvular heart diseases, Cardiomyopathies, congenital heart diseases, thyrotoxicosis, Cor pulmonale and hypervolemia due to renal failure. Patients with new onset myocardial infarctions, acute inflammatory conditions and septicemia were excluded.

Results: Of the 271 patients, 203 (75 %) were males and 68(25%) were females. 184(67.99%) patients had systemic hypertension. 171(63.1%) patients had coronary artery disease. 28(10.3%) patients had dilated cardiomyopathy and 26 (9.59%) had valvular heart disease. 21(7.7%) had chronic rheumatic heart disease. Among them mitral valve disease was present in 16(6.27%) and combination of mitral and aortic valve were 4(1.47%). 3 (1.1%) patients had myxomatous disease of the mitral valve and only 2(0.73%) with degenerative aortic valve disease.18(6.6%) had restrictive cardiomyopathy , 8(3.0%) had cor pulmonale with right heart failure . 6(2.2%) patients had congenital heart disease. 5(1.8%) patients had chemotherapy induced cardiomyopathy (Doxorubicin and Adriamycin) . 4(1.5%) patients had primary pulmonary hypertension , while 2(0.7%) patients has tachycardia induced cardiomyopathy.

71(26.20%) had chronic kidney disease, 170(62.7%) were diabetic, 44(16.24%) were hypothyroid . 110(41.33%) patients were smokers with ex smokers.

Sinus rhythm was present in 196 (72%) patients , 43 (16%) patients had atrial fibrillation, 20 (7%) had left bundle branch block, 4 (3%) had right bundle branch block and 8 (2%) with ventricular tachycardia. Cerebro vascular accident was found in 28(10.5%) patents ,in which 26 (9,5%) had emboli stroke and 2 (0.7%) had hemorrhagic stroke. In patients with cerebro vascular accident , majority were coronary artery disease with severe left ventricular dysfunction, dilated left ventricle (LV end diastolic diameter +_6.5 cm) and were in sinus rhythm 19(7%).

Average hospital stay was 7(+_4) days, maximum duration of stay was 45 days, Prolonged stay was majority with heart failure and renal failure. 10 (3.6%) patients required invasive ventilatory support and 12(4.4) required non-invasive ventilatory support. 30 (11.2%) patients were readmitted within 30 days of discharge and 17(7%) patients readmitted within 90days.

Mortality in this group of patients were 31 (11.5%) when we followed up to 21months and majority were in the age between 70 -79 (4.8%). Major cause of death 20(7.3%) was due to coronary artery disease. Death due to chronic rheumatic heart disease and congenital heart disease were 3(1.1%), idiopathic dilated cardiomyopathy and primary pulmonary hypertension were 2(6.4%) and due to hypertrophic cardiomyopathy was 1(0.3%).

Conclusion: Heart failure is a multi-faceted syndrome with multiple etiologies. We found that systemic hypertension contributes to heart failure 67.99% of patients and ischemic heart disease contributes to 63.1% of patients. Diabetes was the commonest co morbidity of heart failure in our study.

Echocardiographic profile of patient with diabetic cardiomyopathy

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Background: Diabetic cardiomyopathy refers to a disease process which affects the myocardium in diabetic patients causing a wide range of structural abnormalities causing diastolic and systolic dysfunction or a combination of these in the absence of coronary artery disease and hypertension. In our study we tried to evaluate echocardiographic profile of patient with diabetic cardiomyopathy and its correlation with glycemic control.

Methods: In our study we evaluated 25 patient of diabetes with clinical features of heart failure with normal epicardial coronaries & without history of hypertension. We evaluated echocardiographic feature and pattern of systolic and diastolic dysfunction & its correlation with glycemic control in patient of diabetic cardiomyopathy.

Results: In our study all 25 patient were having diastolic dysfunction while systolic dysfunction was found in 5 patients. Out of the patients with diastolic dysfunction, 7 patients were having grade 1 diastolic dysfunction, 6 were having grade 2 diastolic dysfunction, 9 having grade 3 diastolic dysfunction and 3 having grade 4 diastolic dysfunction. While out of 5 patient of systolic dysfunction 3 were having severe systolic dysfunction EF < 30% and 2 were having moderate systolic dysfunction EF 30-45%.

Higher grades of systolic and diastolic dysfunction were associated with poor glycemic control. Out of 25 patients, only 7 patients were having good glycemic control while 18 patients were having poor glycemic control.

Conclusion: Most of the patients of diabetic cardiomyopathy have diastolic dysfunction & higher grades of systolic and diastolic dysfunction were associated with poor glycemic control.

To compare the safety and efficacy of levosimendan and dobutamine inpatients with acute decompensated heart failure

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Aim: The aim of this study is to compare the safety and efficacy of levosimendan and dobutamine in patients with acute decompensated heart failure.To compare the intensive care unit and hospital stay between levosimendan and dobutamine groups.

Methods: A total of 30 consecutive patients hospitalized for acute decompensated heart failure, LVEF≤30% were included in the study. Patients were randomized 1:1 to either dobutamine (minimum dose 5 μg kg-1 min-1) or levosimendan bolus (6μg kg-1) followed by a infusion dose of levosimendan (0.1 μg kg-1 min-1)for 48 hrs. Both treatment groups also received standard care.Effects on haemodynamics were studied.The symptoms of dyspnea and fatigue were evaluated by the patient and the physician at baseline and after 48 hours.

Results: After 48 hrs increase in stroke volume [29% over baseline for levosimendan compared with a 22% for dobutamine, p=0.05] and PCWP-lowering effect of levosimendan (28% decrease over baseline for levosimendan compared with a 13% decrease for dobutamine, p=0.03) is significant. Intensive care unit stay in levosimendan group is 1 day shorter than that of the standard treatment group. Clinical symptoms of dyspnea and fatigue tended to improve more with levosimendan than they did with dobutamine. Levosimendan group was associated with lesser arrhythmias.

Conclusions: Compared with dobutamine, a significantly higher proportion of levosimendan patients experienced haemodynamic